



# WASHRAG™

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N3SH  
WA3SH  
NP2SH/B

Wireless Association of South Hills

# Repeater Update

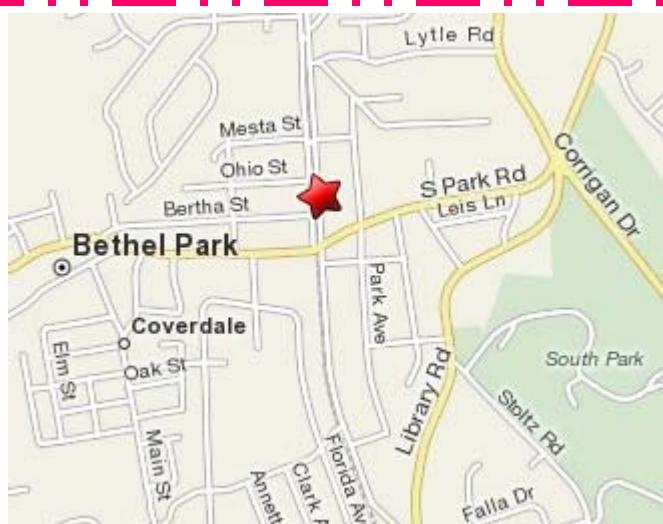
## *Patience, folks...*

The long-awaited repeater move of the 146.955 & 442.55 repeaters took place on Friday, December 3<sup>rd</sup>. However, as was detailed in last month's newsletter, some problems have derailed getting the 146.955 repeater back up and running properly.

Steve W3SRL has indicated that he and Frank N3FB are working on the machine and are making "progress." As of newsletter deadline, Steve is hoping that he and Frank will have time this coming weekend to do further work on the machine.

It's frustrating... and as both Steve and Frank are very busy men, it's taking some time. But it's not forgotten about, and it is coming along, just slowly.

Keep an eye on the club e-mail reflector for any further updates on the situation!



## Next Meeting: February 11<sup>th</sup>, 2010

The next monthly meeting of the [WIRELESS ASSOCIATION OF SOUTH HILLS, INC.](#) will be Thursday, February 11<sup>th</sup>, at the [Peters Township Library](#), 616 East McMurray Road, McMurray, starting at 7:00 PM.

The [WASH 2](#) Meter Simplex Contest, [WASHFest 2010](#), Dayton Hamvention, Breezeshooter's Hamfest & Field Day planning will be on the agenda.

Talk-in on the 146.955(-) N3SH/R and 443.650(+) N3FB/R Repeaters (131.8 PL). All members, guests and interested parties invited!

## WASH 2009

### Christmas / Holiday Party

Our end-of-the-season Christmas/Holiday party will take place on the 15<sup>th</sup> of January 2010, starting at 6:30 PM. Dinner will be served between 7:00 & 7:30 PM. It will be held at the Bethel Park Fire Hall, 5213 Brightwood Road (off South Park Road) in Bethel Park. See the map (below left) Directions can be found on Mapquest at <http://www.mapquest.com/maps?address=5213+Brightwood+Road&city=Bethel+Park&state=PA>

The cost of the party will be \$12.00 per person. We will also have our Chinese Auction.

The menu is as follows:

- Sauteed Chicken Romano
- Slow Roasted Top Round w/Mushrooms in Au jus
- English Style Baked Scrod
- Baked Ziti in Tomato Sauce
- Vegetable Medley
- Parsley Potatoes w/Seasoned Crumbs
- Garden Tossed Salad
- Assorted Dinner Rolls
- Coffee and Pop
- Cake and Cookies

BYOB if you prefer a beverage of alcohol.

Call or email me if you have any questions.

See you at the party!

—73, Carol Danko KB3GMN

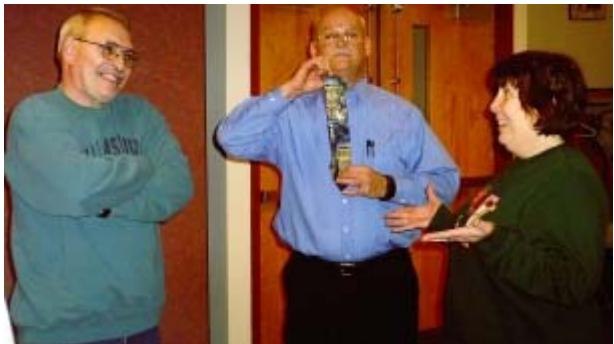
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# "Seen" at the December Meeting



Photos courtesy of and ©Copyright 2009, 2010 Ron Notarius W3WN



## WASH 2010 OFFICERS

### EXECUTIVE COMMITTEE:

President Ron Notarius W3WN  
VP / Secretary Bob Timmins AB3ED  
VP / Treasurer Mark Stabryla N3RDV

### AND WE COULDN'T DO IT WITHOUT:

N3SH / WA3SH Trustee	Steve Lane W3SRL
NP2SH Trustee	Paul Jordan NP2JF
N3SH / WA3SH / NP2SH QSL Manager	Ed Oelschlager N3ZNI
NP2SH 2009 QSL Manager	Carl Schroeder K9CS
VE Team Liaison	Jacqué Gosselin N3ZEL
Webmaster	Randy George N3ZK
Quartermaster	Harold Rosenberger K3HCR
<b>WASH</b> FM Net Manager	Kevin Smith N3HKQ
<b>WASHFest</b> 2010 Committee	Kevin Smith N3HKQ, Chairman Carol Danko KB3GMN
Activities & Operating Events	Bob Timmins AB3ED
Ways & Means	Carol Danko KB3GMN
Field Day 2010 Coordinators	Kevin Smith N3HKQ Randy George N3ZK

### CLUB-AFFILIATED REPEATERS, BEACONS, & DIGIPEATERS:

Mt. Lebanon	N3SH / R	146.955 MHz (-)	PL 131.8
Mt. Lebanon	W3SRL / R	442.550 MHz (+)	PL 131.8
Canonsburg	N3FB / R	443.650 MHz (+)	PL 131.8
St. Johns, VI	NP2SH / B	28.276 MHz	Propagation Beacon
Canonsburg	N3SH	144.390 MHz	APRS Digipeater

**N3SH / WA3SH WASHNet**, the weekly on-air net of WASH, meets every Sunday Night, 9:00 PM ET, on the 146.955 & 443.650 repeaters.

All radio amateurs, WASH members or not, are welcome to join in!

## THE LEGAL STUFF

"The **WASHRag™**" (formerly "The Mariner™") is the Official Newsletter of the **WIRELESS ASSOCIATION OF SOUTH HILLS, INC. (WASH)**

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Editor & Publisher: Ron Notarius W3WN

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Ron Notarius W3WN  
3395 Rosewood Drive  
Castle Shannon, PA 15234-2546

e-mail: [newsletter@n3sh.org](mailto:newsletter@n3sh.org) or [w3wn@arrl.net](mailto:w3wn@arrl.net)

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The **WIRELESS ASSOCIATION OF SOUTH HILLS, INC.** was founded on August 23<sup>rd</sup>, 1993, as the original **SOUTH HILLS AMATEUR RADIO CLUB**, and operated under that name through 1998. WASH was also known briefly in late 1998 as the **N3SH AMATEUR RADIO CLUB**. It is not in any way affiliated with the "South Hills Amateur Radio Club, Inc." and is not responsible for that group, its members, or its actions in any way, shape, or form.

As always, special thanks to the owners of both the N3SH-W3SRL Repeater System and the N3FB/R Repeater System for permitting the **WIRELESS ASSOCIATION OF SOUTH HILLS, INC.** and its members to use their repeaters for club purposes. Special thanks also to Glen Roberts KE7FD of The Internet Guild for his assistance in providing space on-line for our website for back issues of "The **WASHRag™**" which can be found at [www.washrag.info](http://www.washrag.info)

## WASH Amateur Radio Club News Briefs

### Next WASH VE Test January 21<sup>st</sup>

The Next WASH VE exam sessions will be Thursday, January 21<sup>st</sup>, 2009, 6:30 PM, at the [Peters Township Library](#), 616 East McMurray Road, McMurray, PA. Talk-in on the 146.955 MHz and 443.650 MHz repeaters. All examiners are ARRL VEC affiliated.

Walk-ins are always welcome, but if you plan on attending the test session, please contact VE Team Liason Jacqué Gosselin N3ZEL:

Telephone (724) 746-9235 or E-Mail: [n3zel@comcast.net](mailto:n3zel@comcast.net)

Please bring the following to your test session:

Picture ID or other suitable identification (2 forms of ID required)

Pen / Pencil / Calculator

Original FCC license plus a copy of license (if upgrading)

Original CSCE plus a copy of CSCE (if upgrading)

Check or Cash in the amount of **\$15.00** (payable to: ARRL VEC)

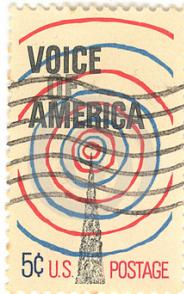
Thursday, April 15<sup>th</sup>, 2010

Future test dates: Thursday, July 17<sup>th</sup>, 2010  
(tentative) Thursday, October 21<sup>st</sup>, 2010  
Thursday, January 20<sup>th</sup>, 2011

**No  
January  
Meeting  
At the  
Library,  
due to  
the  
Holiday  
Party on  
the 15<sup>th</sup>  
at the  
Bethel  
Park  
Fire  
Hall**

### WASHNet 2010 NCS Schedule

01/03 - Bob AB3ED	07/04 - Dave N3IDH
01/10 - Kevin N3HKQ	07/11 - Kevin N3HKQ
01/17 - Dave N3IDH	07/18 - Dave N3DFK
01/24 - Frank N3FB	07/25 - Bill W3WH
01/31 - Dave N3DFK	08/01 - Harold K3HCR
02/07 - Bill W3WH	08/08 - Carol KB3GMN or Richie N3SBF
02/14 - Harold K3HCR	08/15 - Bob AB3ED
02/21 - Carol KB3GMN or Richie N3SBF	08/22 - Frank N3FB
02/28 - Bob AB3ED	08/29 - Dave N3IDH
03/07 - Kevin N3HKQ	09/05 - Kevin N3HKQ
03/14 - Dave N3IDH	09/12 - Dave N3DFK
03/21 - Frank N3FB	09/19 - Bill W3WH
03/28 - Dave N3DFK	09/26 - Harold K3HCR
04/04 - Bill W3WH	10/03 - Carol KB3GMN or Richie N3SBF
04/11 - Harold K3HCR	10/10 - Bob AB3ED
04/18 - Carol KB3GMN or Richie N3SBF	10/17 - Kevin N3HKQ
04/25 - Bob AB3ED	10/24 - Dave N3IDH
05/02 - Kevin N3HKQ	10/31 - Frank N3FB
05/09 - Dave N3IDH	11/07 - Dave N3DFK
05/16 - Frank N3FB	11/14 - Bill W3WH
05/23 - Dave N3DFK	11/21 - Harold K3HCR
05/30 - Bill W3WH	11/28 - Carol KB3GMN or Richie N3SBF
06/06 - Harold K3HCR	12/05 - Bob AB3ED
06/13 - Carol KB3GMN or Richie N3SBF	12/12 - Kevin N3HKQ
06/20 - Bob AB3ED	12/19 - Dave N3IDH
06/27 - Frank N3FB	12/26 - Frank N3FB
	1/2/2011 - Dave N3DFK



December 26<sup>TH</sup> was still a recovery day from Christmas for most of us, but that never stopped the bravest & the boldest few of [the WASH Breakfast Gang](#) at [The Beach House](#) in Finleyville. This month, the awake ones included N3IDH, W9UK, K3VX, WB4GCS, N3HKQ, W3WH & W3WN. As sugar plum cookies danced in our heads, discussions of the morning included Christmas presents, intermittent microphones, blue laws, "cheeseburger cheeseburger cheeseburger! No Coke, Pepsi!", coax latching relays, retrieving soldering irons, holiday eating, "Snapple crackle pop!", working BY1V on 160 —or was it 6Y1V?, club calls in the 2 meter simplex contest, quick disconnect mobile antennas, center fed zepps, repeater woes, special event stations, UPMC Braddock Hospital, SDR radios, and W9UK's observation on baluns, "if it burns your hand — it's not good!"

January marks another new year, and among your resolutions we hope that you'll join us this and every month at [The Beach House](#), Library Road, Finleyville, just south of Trax Farm, with our next gathering on Saturday, January 30<sup>th</sup>. Come down & share a good time with us!

**Logs are due in the next few weeks for the 2 Meter Contest.** Hope everyone had a good time, as Ye Editor was accompanying the XYL to a work related event. But please, make sure that you're using THIS year's entry form... Ye Editor has already started receiving entries, which should be going directly to N3ZNI (don't worry, I'll forward them!)

In the meantime, any pictures or stories from your operating in this year's event, please send to Ye Editor for next month's newsletter. [Unless you'd rather see pictures of the puppy chasing rabbits in the back yard...]

**The 146.955 Repeater** situation, as you saw on Page 1, is moving along slowly, but it is moving along. Just a little more patience. In the meantime, Ye Editor apologizes for not joining in the activity on the club's 440 MHz affiliated repeaters, but timing has just been bad to get his V/UHF antenna back up. Now if we get a break in the weather on an upcoming weekend, and a hand from someone, that situation will also be resolved!

**WASHFest 2010** will be here before you know it. We hope to have an article on that also next month. Most of us who've been around the last few years pretty much know what needs to be done, but still, it never hurts to put the word out and let newer amateurs in our area know that the best little winter hamfest in the region is coming up before you know it! Kevin N3HKQ as always needs a hand covering all the little details, so if you can do so, get a hold of him and let him know. We're really looking forward to another good year, but we can't sit back and assume that it's going to happen on its own... a little effort from a lot of people ensures we'll have another big successful event!

Meanwhile, Ye Editor spoke with Atlantic Division Director N3LLR, and Bill tells us that he and WPA Section Manager N3MSE are looking forward to being there. In addition, Ye Editor had a nice conversation with WPA DXCC Card Checker NQ3A, and Art has also indicated that he can be available for the hamfest. We may have other surprises on that front upcoming...

If you are planning on going to this year's **Dayton Hamvention**, and plan on joining The Usual Suspects from WASH, Steel City, and other clubs... make sure you've talked with Greg NB3C before the end of the month. As usual, Greg has arranged to reserve some dorm rooms for us at the University of Dayton, and he may have a few spaces open. But if he doesn't have people to fill those spaces, he'll turn in the extra rooms for those on the University of Dayton waiting list. You can reach Greg at [kq3dx@hotmail.com](mailto:kq3dx@hotmail.com) for the details if you're interested. Think about it: would you rather spend your shekels on equipment, gadgets & tsotckes, or on the hotel room?

**Help! (I need somebody!):** Mike N3BSQ has been asked to put on a demonstration of Amateur Radio for a group of Tiger Scouts. If you can lend him a hand in explaining the information at their level, please contact Mike directly at [maserowik@verizon.net](mailto:maserowik@verizon.net)

**Join WASH or Renew your Membership for 2010 Today! Membership Application on Page 11!!**

## Minutes, December 10<sup>th</sup> Meeting

Ron Notarius W3WN, Acting Secretary, **WASH**

Larry K3VX, called the meeting to order at 19:15 hours. There were 22 members and guests in attendance.

A moment of silence was observed for recent silent keys and other deserving persons.

A motion was made by Jim WB4GCS to accept the minutes of the November 2009 meeting as published in the December newsletter, seconded by Patty KC4WTT. The motion was voted on and passed.

### Committee reports:

Treasurer (N3RDV): No report

Secretary (AB3ED): No report.

VE Report (N3ZEL): Next exam is January 21<sup>st</sup>, 2010.

Repeaters (N3RNX, W3SRL & N3FB): The N3SH 2-meter and W3SRL 70-cm repeaters were moved. Partial success as the 440 machine is functioning well, but the .955 machine is experiencing some problems. Steve hopes to have it up "soon". It was noted that the new site's Height Above Average Terrain (HAAT) is about 175 feet!

Net Report (N3HKQ): Schedule for 2010 is "owed" and will be out via email soon (*Editor's note: see Page 3*). Kevin apologized for forgetting about the "special guest" NCS.

Contests (K3VX): W3WH & K3VX made over 400 QSO's in the 160 Meter contest. ARRL 10 meter and Stew Perry contests coming up this month, ARRL VHF Sweepstakes and our 2 Meter simplex contest next month. Reminder that the date for the 2 Meter contest is January 9<sup>th</sup>, not the 16<sup>th</sup>.

Ways and Means (KB3GMN): 50/50, Show me the money!

Public Service (N3IDH): Nothing coming up.

Christmas/Holiday Party (KB3GMN): Don't forget that the money is due for the January Christmas/Holiday party, to date we have 38+ planning to attend. Again, a big thanks to Carol KB3GMN for organizing this.

**WASHFest** (N3HKQ): Prizes being ordered from R&L on Saturday (to take advantage of Customer Appreciation Day sale). WACOM has been kind enough to loan us their vendor & attendee lists. Carol KB3GMN has been a big help! Also a great deal of help from Steve W3SRL—10 table sold.

President's Report (K3VX): No report.

Old Business: None

New Business:

- Discussion on repeater antenna. The current antenna (at the new site) is about 10 years old. Kevin N3HKQ moved to authorize purchase of a replacement antenna whatever the President & W3SRL think is appropriate. 2<sup>nd</sup> by Carol KB3GMN. Amendment by Dick N3QMV to include money to pay for our share of the commercial tower crew (to climb the tower). Motion passed with two opposed (N3SBF & N3FB).
- Kevin N3HKQ moved to replace the tent (owned by WB4GCS & KC4WTT) damaged at Field Day 2009, and repair the old tent for our own use, ie, to make restitution to the tent owners. 2<sup>nd</sup> by Glen KE7FD. Passed unanimously with two abstentions (WB4GCS & KC4WTT)

Good of the Order: Frank N3FB mentioned that he has "a bunch" of electronic parts let him know if you need anything, he may have it. Larry K3VX also mentioned that he has an assortment of parts.

Motion to Adjourn: Made by Carol KB3GMN W3WH, seconded by Dave N3IDH. The motion was voted on and passed. The meeting was adjourned at 19:45 EST.

Program: Snacks and holiday treats by many club members, organized by Kevin N3HKQ (thanks Kevin) and general conversation.



## WASH Spotlight: AE3DL & N3SBF



Don AE3DL and Richie N3SBF chatting at the December meeting.

(Photo courtesy of & ©Copyright 2009, 2010 Ron W3WN)

Hope that you'll join in the festivities for our "end of season" Christmas/Holiday Party!

Every month we're going to feature a **WASH** club member, something about them, something they're involved in or a club-related activity that we're involved in, in the **WASH Spotlight**. Submissions for the Spotlight should be sent to Ron W3WN at [newsletter@n3sh.org](mailto:newsletter@n3sh.org)

## Monthly **WASH** Breakfast

Please join us for the next **WASH** Breakfast! We usually get together on the LAST Saturday of every month for a chance to informally sit down, shoot the breeze, compare notes, drink lots of coffee, and just have a good time!



Join us this month at **The Beach House**, on Route 88 in Fiinleyville, just south of Trax Farms and adjacent to Mineral Beach. Start time is about 8 AM until ???? Monitor 146.955 & 443.650 for talk-in or any last minute changes.

All are welcome, **WASH** members or not, amateurs or not!

## Wireless Association of South Hills Membership

AB3ED	KB3IAC	N3QMV	WB3CAI	WASH FL	WASH VI
AB3EN	KB3IRQ	N3RDV	WB4GCS	KA3UPY/MM	NP2JF
AE3DL	KB3IVW	N3SBF	WO3Z	W4ZE	Silent Keys
AC4KU	KB3IVX	N3TIR		WASH GA	
K3AIR	KB3ORR	N3ZEL	Mary Jean Senk	K3OL	K3EED (George)
K3AVQ	KB3SRB	N3ZNI		KB3JX	KA3NMG
K3GW	KB3SVX	N9OKM	Jane Wagner	WASH NC	KB3ENX
K3HCR	KC4WTT	NU3S		N3RNX	KB3FNM
K3LGM	KE7FD	W3LE		WASH NE	N3FZ
K3SGT	N1NCZ	W3RJM		N0PEU	N3KEH
K3VX	N2QIV	W3RWS		WASH OH	N3OBD
K3WJL	N3AWF	W3SRL		N8DPW	N3SKR
KA3TWI	N3BPB	W3VFA		WASH TN	N3XFE
KB3DCO	N3CZZ	W3WH		KE3XB	W3ZLK
KB3GMN	N3DFK	W3WN		N3YPB	
KB3GMP	N3FB	WA3JPP		WASH TX	
KB3GMU	N3HKQ	WA3NB		K3LGM	
KB3HFP	N3PN	WA3RVD	Jane Wagner		

Through December 6<sup>th</sup>, 2009

List complied by

Mark Stabryla N3RDV, Vice President/Treasurer

# 2010 WASH Upcoming Events Calendar

Meeting Topics & Other Significant Club Events — Subject to Change

January 9 <sup>th</sup>	WASH 2 Meter Simplex Contest	<a href="http://www.n3sh.org">http://www.n3sh.org</a>
January 14 <sup>th</sup>	No WASH Meeting	Holiday Party Next Day!!
January 15 <sup>th</sup>	WASH Christmas/Holiday Party	Bethel Park VFD
January 21 <sup>st</sup>	WASH VEC Exam	Pre-register via <a href="mailto:n3zel@comcast.net">n3zel@comcast.net</a>
January 23 <sup>rd</sup> — 25 <sup>th</sup>	ARRL January VHF Contest	<a href="http://www.arrl.org">http://www.arrl.org</a>
February 11 <sup>th</sup>	WASH Meeting	Final WASHFest Planning Session
February 14 <sup>th</sup>	BVARA TechFest	<a href="http://www.w3sgj.org">http://www.w3sgj.org</a>
February 20 <sup>th</sup> -21 <sup>st</sup>	ARRL DX Contest CW	<a href="http://www.arrl.org">http://www.arrl.org</a>
February 28 <sup>th</sup>	WASHFest 2010	<a href="http://www.n3sh.org">http://www.n3sh.org</a>
March 6 <sup>th</sup> – 7 <sup>th</sup>	ARRL DX Contest SSB	<a href="http://www.arrl.org">http://www.arrl.org</a>
March 11 <sup>th</sup>	WASH Meeting	Post Hamfest Pizza Night
March 27 <sup>th</sup> – 28 <sup>th</sup>	CQ WPX Contest SSB	<a href="http://www.cq-amateur-radio.com">http://www.cq-amateur-radio.com</a>
April 8 <sup>th</sup>	WASH Meeting	To Be Announced
April 15 <sup>th</sup>	WASH VEC Exam	Pre-register via <a href="mailto:n3zel@comcast.net">n3zel@comcast.net</a>
May 13 <sup>th</sup>	WASH Meeting	To Be Announced
May 14 <sup>th</sup> – 16 <sup>th</sup>	DAYTON HAMVENTION	<a href="http://www.hamvention.org">http://www.hamvention.org</a>
June 6 <sup>th</sup>	Breezeshooter's Hamfest	<a href="http://www.breezeshooters.org">http://www.breezeshooters.org</a>
June 10 <sup>th</sup>	WASH Meeting	Field Day Final Planning Session
June 12 <sup>th</sup> – 14 <sup>th</sup>	ARRL June VHF Contest	<a href="http://www.arrl.org">http://www.arrl.org</a>
June 26 <sup>th</sup> – 27 <sup>th</sup>	ARRL Field Day	<a href="http://www.arrl.org">http://www.arrl.org</a>

## Job Posting:

Product Manager at TEN-TEC Inc. Sevierville, TN

Summary: Plans, organizes, and controls all Sales and Marketing of Ten-Tec products through the product life cycles to optimize profit and meet marketing, financial, and corporate growth objectives.

General class amateur radio license or higher required.

See full description on our web site [www.tentec.com](http://www.tentec.com)

e-mail resume to [jobs@tentec.com](mailto:jobs@tentec.com)



Could this be your  
dream job?

# Computer Corner

Greg Babin NB3C courtesy [of Kilo-Watt Harmonics](#)

Yet another one of my brainstorm ideas for making the newsletter just a wee bit better than the others you're reading. This'll be a (semi) frequent feature where I discuss computer related stuff. Unlike the 'Software-Of-The-Month' stuff I run, I will be focusing on the hardware side of things in this column. I figure what with computers being an integral part of most of our shacks, that this might be a good column to run. Is it going to make you an expert on computers? Probably not, but at least the next time you're looking at a new computer, you'll be able to make sense of the alphabet soup on the description/price tag.

YE OLDE EDITOR'S DISCLAIMER: There is none, as I am not referring to any web-sites or particular manufacturers. Gotcha!! Thanks for reading! 73 de NB3C.

This time out, I'm going to talk about: **RAM**

RAM, short for 'Random Access Memory' is a form of data storage on your computer. It's a temporary storage that holds info for the CPU to process, sort of a 'holding tank' that contains data to be processed by the CPU.

RAM on your computer is 'volatile', which means that when power is lost, so is the data contained within it. Today's RAM module, which plugs into your computer's motherboard, is comprised of millions of transistors and capacitors. In the most common form of memory today, DRAM, a transistor and capacitor are paired together to create a single memory cell. The cap holds a single bit of information: A '0' or a '1'. The transistor will act as a switch that lets circuitry on the chip read the data contained in the capacitor, or change its state.

RAM is not limited to just the memory modules that plug into your motherboard either. You'll find RAM in your CPU, hard-drive, and other components that live inside the box, especially video cards. Video card RAM will help to unload your processor burden, thereby helping to speed up the system. When the CPU is accessing RAM memory, it'll usually do it in a specific order; that being fastest access (such as RAM on the CPU itself) to the slowest access (such as virtual memory being used on a hard drive).

The term 'RAM' is kind of a misnomer, since it can refer to all memory that resides on the CPU, in addition to the memory modules installed on the motherboard, as well as hard-drive space being used as virtual memory.

Don't confuse 'RAM' with **ROM**. 'ROM' is short for 'Read-Only-Memory'. ROM data cannot be modified as easily or as fast as RAM can. Remember those old CD-ROM drives on your computer? They could not write data to a disk; only read it. A good example of ROM on your computer today is the BIOS, contained on the motherboard. BIOS is boot firmware, residing on the motherboard. This is the first code run by a PC when it is turned on. It'll identify, test and initialize devices in the system, such as video cards, hard drives, etc. BIOS will put the machine into a stable state, so the operating system stored on the hard drive can be loaded and executed, thereby taking over control of the computer.

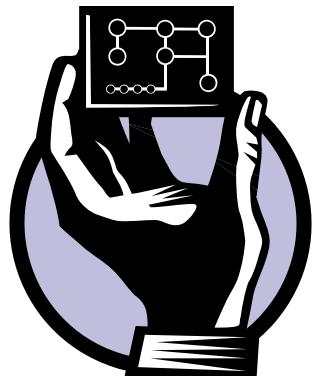
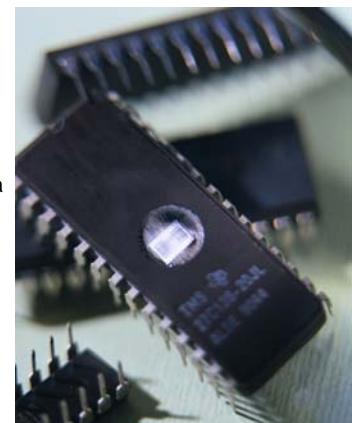
Here is some of the different RAM specs you'll likely see in today's computers:

- **DRAM:** Short for 'Dynamic Random Access Memory' is a type of RAM that stores a single bit of data in a capacitor within an IC. Due to the capacitor leaking it's charge, the information it holds needs to be refreshed occasionally. Due to this requirement it is given the name 'Dynamic' as opposed to Static RAM or SRAM. DRAM's advantage over SRAM is that only one transistor and capacitor are required to hold a single bit of data, as opposed to SRAM's 6 transistors. Therefore, you can pack a lot of punch onto one chip. DRAM is volatile memory; it will lose its data when power is lost.
- **SRAM:** Short for 'Static Random Access Memory' is memory whose data does not need to be refreshed occasionally like DRAM. It is however, still volatile memory.
- **SDRAM:** Short for 'Synchronous Dynamic Random Access Memory'. This type of chip has 'Pipelining' capabilities, where the chip can accept a new instruction to be processed, before it has finished processing the previous one. Later generations of SDRAM, known as DDR, DDR2 and DDR3 are now in widespread use. DDR4 is expected to be available in 2012. It is currently under design.
- **CAS Latency:** Column Address Strobe Latency. This is the delay time that exists between the moment a memory controller tells a memory module to access a memory column on a RAM memory module and the time the data is available on the module's output pins. This is either measured in nanoseconds or clock cycles/ticks. If you're a system builder/enthusiast, this is an important parameter to consider when building your system, or upgrading your memory in your existing computer.
- **DDR RAM:** 'Double Data Rate' RAM. This type of RAM is twice as fast as SDRAM. It achieves this by 'double-pumping' which is transferring data on the rising & falling edges of the clock signal, without the need for increasing the clock frequency.
- **DDR2 RAM:** Also a double data rate RAM. Not only does it employ double-pumping as DDR RAM (which, by the way, can also be referred to DDR1), but it also employs an input-output (I/O) buffer. By doing so, the data bus can be run at twice the speed of the memory clock. The result? It is twice as fast as DDR (AKA DDR1) RAM. NOT compatible with plain old DDR RAM.
- **DDR3 RAM:** 'Double Data Rate 3 Synchronous Dynamic RAM. Twice as fast as DDR2 RAM. The DDR3 standard can accommodate 512 megabytes to 8 gigabytes, which can result in a memory module size of up to 16 gigabytes. NOT compatible with DDR2. BTW: A byte is a basic unit of data storage, usually a '1' or a '0'. A byte is a collection of bits, usually 8 bits. As of right now, DDR3 is the fastest stuff out there. You'll see such speeds as 667MHz, 800MHz, 1333MHz, 1600MHz and 2000MHz on today's machines.
- **DDR4 RAM:** The next step up. Currently under development, and is slated to hit the streets sometime in 2012. They will run at a voltage of 1.2V, vs 1.5V of DDR3, and will have in excess of 2 BILLION data transfers per second. The clock speed on the first chips will be around 1600MHz, and are estimated to rise to as much as 3200MHz, along with a lower operating voltage of just 1V by 2013.

Well, I hope you enjoyed my first installment of 'The Computer Corner'. Again, it's not my intention to make you an expert. However, the next time the XYL (or YL) asks you 'Honey, what does DDR3 mean?', you'll be able to baffle her with an extremely technical explanation, making you look very smart & sophisticated in her eyes. Lemme know what you think of the column. And, of course, if you wanna contribute something, that is absolutely AOK with me too! Send it to:

[<KQ3DX@hotmail.com>](mailto:<KQ3DX@hotmail.com>) and I'll run it here! If it is hardware related, I want it for this column!

If you haven't snoozed off to sleep yet, thanks for reading along! 73 de NB3C.....



# New CW Operators Club Formed

Jim Talens N3JT, Secretary, CWOps

A new club has been formed among Amateur Radio operators who are Morse Code (CW) enthusiasts. It is called The CW Operators' Club (CWops). CWops encourages the use of CW in Amateur communications, and it promotes goodwill among Amateurs around the world by planned CW activities.

CWops is international in scope, membership and management. Its focus is the use of CW, whether for contesting, DXing or ragchewing. Moreover, it promotes every form of sending -- if it's CW, CWops supports it!

For further information, go to [www.cwops.org](http://www.cwops.org). There you will find everything that you might want to know about CWops, including our bylaws and articles of incorporation, our planned activities, an explanation of how to become a member, and a list of current members.

You say potato, I say potahto, you say ham, I say amateur... you see where I'm going with this? (OK, maybe not). Amateur Radio, that's where and that's what [the January 2010 issue of Linux Journal's focus is](#). What you might ask is the connection between Amateur Radio and Linux? Well Linux may be the only O/S out there with an AX.25 packet radio protocol driver, and it's had it since forever. So blow the dust off your license and start reading. If Ham's not your favorite food, don't despair there are plenty of other articles in this month's issue including, but not limited to, Firewall Builder, Cucumber, Vimperator, port knocking with knockd, building appliances with Linux and Xen, and using Twitter from the command line.

- An Amateur Radio Survival Guide for Linux users by Dan Smith
- A getting-started guide for Linux users looking to venture into the world of Amateur Radio.
- Xastir—Open-Source Client for the Automatic Packet Reporting System by Curt E. Mills, Steve Stroh and Laura Shaffer Mills
- Rolling Your Own with Digital Amateur Radio by Gary L. Robinson
- Amateur Radio and open source—a heavenly match.

— Kelly Keaton K7MHI courtesy of <http://www.grz.com>

## Preliminary In-State Scores, Pa QSO Party 2009

### WASH Members

County	Call	QSO's	Co's	Secs	Score	Class	PWR	Club
Allegheny	W3WN	356	67	35	44884	MS	LO	WASH
Allegheny	N3BPB	136	22	30	7072	SO	LO	NON
Armstrong	W3WH	485	63	45	86856	MM	LO	WASH
Clarion	N3SBF	390	63	43	41930	MS	LO	WASH
Venango	N3ZK	739	67	63	131080	MM	LO	NON
Washington	N3ZEL	104	46	19	7160	SO	LO	NON
Mobile	N3ZNI/M	No Preliminary Score Posted At This Time						

### Other Notable Club Calls

County	Call	QSO's	Co's	Secs	Score	Class	PWR	Club
Allegheny	W3WPA	674	65	62	111600	SO	HI	AVRA
Allegheny	W3KWH	690	66	58	99413	MM	HI	Steel City ARC
Cumberland	NY3DX	307	55	48	50772	SO	LO	Mt. Holly DXA
Erie	W3GV	484	56	57	76040	MM	LO	RA of Erie
Greene	N3GC	248	32	40	61632	CW	QRP	Greene Co ARC
Luzerne	K3YTL	1116	60	73	194360	MM	HI	Murgas ARC
Northampton	W3OK	526	62	49	59336	MM	HI	DLARC
Washington	WA3COM	702	63	75	97778	MM	HI	WACOM
Westmoreland	K3MJW	1028	64	69	175537	MM	HI	Skyview RS

Last Updated 11 Dec 2009 6:10 PM

There aren't many ham radio programs that have lasted for more than 20 years, like Log-EQF. It has been a labor of love for most of that time, but sadly it's time to move on and let younger programmers fill the void.

There will be no further sales of Win-EQF "Log-EQF for Windows" after December 31<sup>st</sup>, 2009. I will continue to provide technical support for at least one year after that, but there will be limited updates to the program.

I'm sorry if this decision disappoints some of you, but the constant work involved in supporting a Windows program for ham radio has become too time-intensive.

The advent of Windows 7 was probably the last straw, on top of the never-ending changes required to accommodate new rigs, rotors, keyers, clusters, modes, contests, awards, callsign databases, etc.

I want to thank all of my loyal users for the many years of support. It's been a real pleasure meeting some of you at hamfests and club meetings. Some of those eyeball QSOs have turned into lasting friendships. In particular, many thanks to John Shelton, K1XN, for his help in recent years to keep Win-EQF in distribution and the DXCC prefix list up-to-date.

— Tom Dandrea N3EQF

[http://www.nittany-arc.net/Paqso\\_pdfs/prelim\\_instate\\_09.pdf](http://www.nittany-arc.net/Paqso_pdfs/prelim_instate_09.pdf)

[http://www.nittany-arc.net/Paqso\\_pdfs/prelim\\_oostate\\_09.pdf](http://www.nittany-arc.net/Paqso_pdfs/prelim_oostate_09.pdf)



# 10 Signs That An Online Review Has Been Planted

Paul Veal NØAH courtesy of [www.eham.net](http://www.eham.net)

1. MSRP listed is actually 80% lower than what is found in stores and online
2. Mississippi Hams make up 9 out of 10 reviews, all using same sentences
3. Magazine calls product "a bit cranky" yet rates it as wonderful and dynamic
4. Product has 20 power adjectives in 30 word review ending in "I'm blessed!"
5. "TM" is listed after every sentence
6. Review states "my amp cruises past legal limit all day and night"
7. 12 foot wonder vertical for 80M without need for radials outperforms 4 SQR
8. I swear! Honest! Gosh darn!
9. My new DSP speaker hears the sounds from WW II reflected back from Neptune
10. Our lab proves it...next to ad that shows it...

## HF AM Mode Transmitter Rally February 6<sup>th</sup> — 7<sup>th</sup>

Paul Courson WA3VJB

Building on the success of AM-specific operating events such as the Heavy Metal Rally, 1<sup>st</sup> Wednesday AM Night, and the Antique Wireless Association's Amplitude Modulation QSO Party, organizers announce the AM Transmitter Rally, taking place February 6<sup>th</sup> on 160-10m using "standard" Amplitude Modulation.

The purpose of this event is to encourage the use of Amplitude Modulation on the Amateur Radio Bands, and to highlight various types of AM equipment in use today. This event is open to any and all radio amateurs who are running full carrier amplitude modulation (standard AM), and any type of equipment may be used.

Although there is a "points" system to encourage friendly competition, there is also an awards incentive for categories that showcase the relaxed, satisfying nature of receiving and transmitting conversations on AM. The event runs from 6:00 AM EST Saturday morning February 6<sup>th</sup>, to 2:00 AM EST the following day (1100 Z February 6<sup>th</sup> — 0700 Z February 7<sup>th</sup>).

Commonly used AM Frequencies:

- 160 Meters: 1880-1885, 1930, 1945, 1975-1995 kHz.
- 80 Meters: 3730-3740, 3870-3885 kHz.
- 40 Meters: 7160, 7280-7295 kHz.
- 20 Meters: 14286 kHz.
- 15 Meters: 21425 kHz.
- 10 Meters: 29000-29200 kHz.

Complete details with scoring, awards, logbook templates, and additional information is at: <http://www.classeradio.com/amtr.pdf>

**All radio amateurs are requested to keep 14300 (IATN), 14265 (SATERN), 7265, 7045, 3977 and 3720 kHz clear for possible emergency traffic related to the major earthquake in Haiti.**

**Additional frequencies may be activated on different bands at different times of day. Please listen before transmitting!**

## DX News Briefs

G3RWF will return to Uganda from 21 January through 20 March to do volunteer work. He will be QRV in his spare time as **5X1NH** from Fort Portal. He prefers CW but will do some activity on the Digital modes and SSB. He has no room for a 160 antenna but will be on all other HF bands. QSL via home call and LotW — OPDX



JA8BMK will be QRV as **CEØZA** from Juan Fernandez island for about 2 weeks, 19 January through 2 February. He will focus on the low bands, but will be QRV 160-10 meters. QSL via home call — DX World

G3BJ will be QRV from Christmas Island (OC-024) as **T32BJ** 14—19 January. Focus will be on LF & EU, CW only, holiday style operating. QSL via home call — DX World

Look for HA5PP from Cyprus as **5B/HA5PP** during both modes of the CQ WW contest this fall. QSL via HA5PP — OPDX

DK7LX is planning to be QRV from Macau as **XX9TLX** later this year, exact dates to be announced. — DX World

IK8VRH has updated the dates of his group's DX-pedition to Kenya. They now plan to be active 12—25 February. They will activate **5ZØH** from Laum Island (AF-040) and Wasini Island (AF-067), the first time this prefix has ever been active. They will be active on CW, SSB, & RTTY and in the ARRL DX CW contest in February. QSL via bureau, LotW or direct to IK8VRH. More info at <http://www.ddxc.it> — OPDX, 425 DX

SMØXBI will be QRV from Dominica as **J79XBI** now through the end of March, SSB on all bands. He prefers to confirm via Logbook of the World and via the bureau — DX World

CT1ITZ will be returning to Angola in February and will once again be QRV as **D2CQ**. He will be returning with a 5 band beam. He should be working in Angola for the next few years. QSL via CT1IUA — CT1IUA

A group of OH amateurs will put the Azores on 160 meters with new vertical & Beverage antennas starting 16 January. They will be QRV as **CR2X** in the CQ WW 160 and ARRL DX contests. Some operators may also be QRV under their individual CU callsigns. QSL CR2X via OH2BH — OH2BN

AD7AF will operate from the Cook Islands 12 January through 20 February as **E51WWA**. He will be QRV from Rarotonga (OC-013) South Cooks 12 Jan — 1 Feb and 17 — 20 Feb, from Manihiki (OC-014) North Cooks 3—15 Feb, possibly under a different call. He will be operating barefoot with vertical dipoles and wire antennas, 40—10 meters, primarily CW with some SSB & digital modes as propagation allows. Some limited 80 meter operation may also take place depending on the antenna situation. QSL via AD7AF or Logbook of the World — AD7AF, 425 DX

## QSL Routes

3D2KJ via SP5DRH — JA1HGY	P29NI via G3KHZ — W3AWU
3D2MJ via SP5EAQ — K1NU	PZ5M via AJ9C via JA1HGY
3D2NB via W7YAQ — RN3RQ	R1ANC via UA1PAC — W2IRT
4U1UN via HB9BOU — JA1HGY	T3ØGM via PG5M — W2IRT
5H3EE via DL4ME — W5TFW	T88CW via JHØIXE — RN3RQ
7P8MM via WØMM — RN3RQ	TMØM via F6ANA — W3AWU
8R1PY via PY2WAS — PY2SEX	TO4X via KQ1F — RN3RQ
9L1X via I2YSB — LU2DKN	TX5SPA via SP9PT — W2AY
9N7JO via LA7JO — UA3FDX	TX5SPM via SP9PT — JRØAMD
A61AB via IZ8CLM — W5TFW	UN8GV via RD3AY — DO1DXX
C37URE via EA4URE — AA5AM	VK9LA via VK4FW — JRØAMD
CR2X via OH2BH — OH2BN	VP8YLG via SV2KBS — DO1DXX
CU2KG via OH2BH — OH2BN	VYØO via VE3LYC — JA1HGY
CU2KH via OH8NC — OH2BN	XV2RZ via OH4MDY — JRØAMD
D2CQ via CT1IUA — CT1IUA	XV4D via DL7UFR — DO1DXX
E51WWA via AD7AF — AD7AF	YJØPX via AI5P — W2IRT
EA9/OL8R via OK1DRQ — EU7SA	YW5F via DM4TI — DO1DXX
FT5GA via F5OGL — KZ2I	ZC4VJ via MØURX — DO1DXX
HVØA via IKØFVC — W5TFW	ZD7X via WØMM — RN3RQ
IMØA via ISØBMU — W3AWU	ZF2DX via N7DW — W4DN

Thanks to the NJDXA DX News & DX Chat Reflectors, the DX-QSL Reflector, 425 DX News, OPDX News, Diamond DX Club News, ICPO Bulletin, & ARRL DX Bulletin for our **DX News** information. Thanks also to Bill Moore NC1L / ARRL DXCC Desk, & Bernie McClenney W3UR / The Daily DX for confirmations & additional information.



## WASH Classifieds

Information shown here is as supplied to the **WASHRag**. Condition as stated, and all sales should be considered "as-is" unless otherwise noted. All subject to prior sale or withdrawal from sale at the owner's discretion. All responsibility for this information lies with the source and not the **WASHRag** or the **WIRELESS ASSOCIATION OF SOUTH HILLS, INC.**

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Antenna Zoning or PRB-1 Issues?

Contact: **Michael S. Lazaroff K3AIR, Esquire**

The Ferry Building, 127 S. McKean St., Butler, PA 16001  
Phone: 724-431-0400 Fax: 724-431-0401  
[lazaroff@murrinlaw.com](mailto:lazaroff@murrinlaw.com)

Custom Decals, Signs, Plaques and Woodworking from **Randy George N3ZK**

More information at his web site, Randy George Woodworking <http://www.randygeorgewoodworking.com/>

See his eBay store for special deals at [http://stores.shop.ebay.com/Randy-George-Custom-Signs\\_W0QQ\\_armrsZ1](http://stores.shop.ebay.com/Randy-George-Custom-Signs_W0QQ_armrsZ1)



**FOR SALE:** 10 Meter Vertical. "Just in time!" for the Breezeshooter's contests, including a 25 foot telescoping mast from Lowe's and 50 feet of RG-8 coax. System is "Ready to go!" for Breezeshooter's! It's helped me win First and Second place in the past! It is 19 feet high and in great condition. Bought for \$160, will sell the whole package for \$75. Email me with any questions. Paul Lusardi NØVLR [n0vlr@comcast.net](mailto:n0vlr@comcast.net)

## FCC Seeks Public's Help In Reform Effort

According to its chairman, the Federal Communications Commission wants to change the way it is seen by the American public. In order to further that effort, on January 7<sup>th</sup>, FCC Chairman Julius Genachowski announced that the Commission has launched a new Web site -- [Reboot.FCC.gov](http://Reboot.FCC.gov) — saying it is the first-ever Web site dedicated to soliciting public input on ways to improve citizen interaction with the FCC, "creating a forum where the public can participate in improving the FCC."

Genachowski called the newly launched Web site as "a site dedicated to public education and discussion on how we can continue to improve our operations, both online and offline, here at the FCC. This effort is consistent with the President's Open Government directive, creating a forum where the public can participate in improving the FCC."

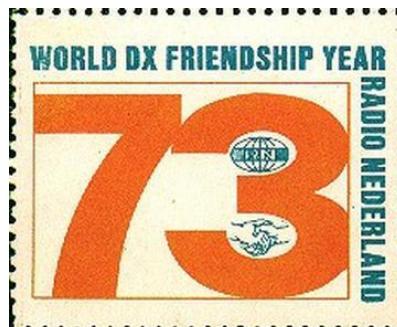
Saying that transforming the Commission into "a model of excellence in government" is one of his top priorities, Genachowski said that "the success of this transformation depends on strong public participation throughout the process. With the launch of [Reboot.FCC.gov](http://Reboot.FCC.gov), our goal is to get input from all corners of the country on ways to improve usability, accessibility and transparency across the agency."

To advance the FCC reform agenda, Genachowski said he has appointed a team of senior leadership from within the agency "dedicated to identifying the most needed and important areas for improvement." The [Reboot.FCC.gov](http://Reboot.FCC.gov) Web site highlights five key elements of FCC reform for public discussion and feedback:

- Redesign of the FCC Web site: As part of a long-overdue redesign of the FCC's Web site, the FCC is asking for ideas on how best to streamline and improve the experience for all site visitors.
- Data: Because data underlies all agency proceedings, the FCC is launching another Web site — [FCC.gov/data](http://FCC.gov/data) — an online clearinghouse for the Commission's public data. The Commission is also looking for additional ways increase openness, transparency, efficiency and public oversight.
- Engagement: The FCC is reevaluating how citizens engage in government and is exploring new ways to increase public participation through the use of new media tools, e-rulemaking and expanding their audiences.
- Systems: The FCC is overhauling and reforming the systems available on the FCC's Web site, from the Electronic Comment Filing System to creating a Consolidated Licensing System. They want feedback on ways to make them easier to navigate and more useful.
- Rules and Processes: The FCC aims to modernize and grow the efficiency of agency proceedings, and seeks input on ways to improve the quality of agency decision-making, reduce backlogs and enhance the public's ability to understand and participate in Commission proceedings.

According to the Chairman, the new Web site boasts the first FCC-wide blog, online workshops on the Commission's reform agenda and "the first edition of new tools to increase transparency and access to public data. Most importantly, you'll find many opportunities to share your ideas and insights on how we can continually improve the FCC. I encourage ever one of you to contribute to the site. <http://www.youtube.com/watch?v=Czlx-Z7794s>"

Has Roadway found the tower yet?





# WASHFest 2010

*The South Hills Hamfest — Now in our **FIFTEENTH** big year!*

*Sponsored by the WIRELESS ASSOCIATION OF SOUTH HILLS AMATEUR RADIO CLUB, INC.*

**Sunday, February 28<sup>th</sup>, 2010**

8:00 AM until 3:00 PM Rain or Shine (or Snow!)

**Castle Shannon VFD Memorial Hall**

3600 Library Road (State Route 88), Castle Shannon, PA

Talk-In on 146.955(-) and 443.650(+) 131.8 PL

## Special Guests:

Atlantic Division Director Bill Edgar N3LLR

WPA Section Manager John Rodgers N3MSE

WPA DXCC Card Checker Art Lund NQ3A



**(800) 545-8881**

*FREE Coffee for the entire Hamfest  
courtesy of HAM RADIO INSURANCE ASSOCIATES  
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## MAIN PRIZES — *You've Got to play to WIN!*

**1<sup>st</sup> Prize:** ICOM IC-7200 HF & 6 Meters

**2<sup>nd</sup> Prize:** ICOM IC-91A/D 2 M/70 cm D-STAR

**3<sup>rd</sup> Prize:** Heil BM 10-5 Boom Headset



### Additional Hourly Door Prizes!

Main Prize tickets are \$2.00 each, 3 for \$5.00, 7 for \$10, 15 for \$20

All Prizes Subject to last-minute changes

For reservations, or information, Contact:

Kevin Smith N3HKQ at (724) 258-4153, or Carol Danko KB3GMN at (412) 884-1466  
E-mail us directly at [washarc@yahoo.com](mailto:washarc@yahoo.com) Check out our website too! [www.n3sh.org](http://www.n3sh.org)



Hamfest Table Reservation Form—Please PRINT LEGIBLY ALL INFORMATION

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Address: \_\_\_\_\_ Phone: (      ) \_\_\_\_\_ - \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_

Call Sign: \_\_\_\_\_

Tables WITH Electricity: \_\_\_\_\_ X \$15.00 = \_\_\_\_\_

Tables WITHOUT Electricity: \_\_\_\_\_ X \$10.00 = \_\_\_\_\_

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# WIRELESS ASSOCIATION OF SOUTH HILLS, INC.

## Membership Application/Renewal for 2010



I would like to join WASH!. I am interested in the following type of membership:  **New Membership**  **Membership Renewal**

(check quarter  1st Qtr Jan-Mar  2nd Qtr Apr-Jun  3rd Qtr Jul-Sept  4th Qtr Oct-Dec)

(F1) Full Membership: \$20.00  \$15.00  \$10.00  \$5.00  
 (F2) Full Membership < 18 or > 65 yrs of age: \$10.00  \$7.50  \$5.00  \$2.50  
 (A1) Associate Membership: \$10.00  \$7.50  \$5.00  \$2.50

(FM1) Family Membership (\$3.00 x No. of household family members): \$\_\_\_\_\_

Name(s): \_\_\_\_\_

Name: \_\_\_\_\_

Address: \_\_\_\_\_

City, State: \_\_\_\_\_

Home Phone: \_\_\_\_\_

Email Address: \_\_\_\_\_

New Members Only:

I do NOT want to be added to the Club E-Mail Reflector

I do NOT want to be added to the Electronic Newsletter Mailing List

[If you have an Email address, you Will be added to both lists UNLESS you choose to Opt-Out]

Signature: \_\_\_\_\_

Call Sign: \_\_\_\_\_

License Class: \_\_\_\_\_

Expires On: \_\_\_\_\_

Work Phone: \_\_\_\_\_

Birthday: \_\_\_\_\_

ARRL Member?  Yes  No Family ARRL Member?  Yes  No

Date: \_\_\_\_\_

Amount Enclosed: \$\_\_\_\_\_

Please make your check or money order payable to the club treasurer, Mark Stabryla.

The Wireless Association of South Hills, Inc. reserves the right to accept or reject new memberships or renewals.

Please return completed membership form along with check/money order to the club treasurer or mail to:

WIRELESS ASSOCIATION OF SOUTH HILLS, INC.  
 c/o Mark Stabryla N3RDV, VP/Treasurer  
 1120 McKnight Drive  
 Bethel Park, PA 15102-2456



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Benefits for you: Joining and participating in everything the League has to offer, including a QST subscription.

Benefits for the club: A few more shekels for our coffers.

Just fill out the form below, include a check or money order made out to WASH/ARRL, and return all to the club treasurer or mail to:

WIRELESS ASSOCIATION OF SOUTH HILLS, INC.  
 c/o Mark Stabryla N3RDV, VP/Treasurer  
 1120 McKnight Drive  
 Bethel Park, PA 15102-2456

Name: \_\_\_\_\_

Call Sign: \_\_\_\_\_

Address: \_\_\_\_\_

Date of Birth: \_\_\_\_\_

City, State, ZIP: \_\_\_\_\_

Total Enclosed: \$\_\_\_\_\_

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# Is There An Impending Shortage of Wireless Spectrum?

Summer Lemon, IDG News Service

U.S. Federal Communications Commission Chairman Julius Genachowski said an impending shortage of wireless spectrum in the U.S. will dampen future economic growth unless action is taken to fix the problem.

"Our data shows there's a looming crisis, not tomorrow, not next week, not next year, but at some point in the future," Genachowski told attendees at the International Consumer Electronics Show (CES) in Las Vegas on Friday, January 8<sup>th</sup>.

"The record is pretty clear that we need to find more spectrum," he said.

The FCC has identified the limited supply of wireless spectrum as one of the factors that could limit the growth of broadband Internet services in the U.S., which could result in slower economic growth and job creation.

Wireless spectrum will be addressed, along with other factors affecting broadband access and services, in a national broadband plan that the FCC is now assembling. The plan was originally due to be completed next month, but the FCC received a 30-day extension from the U.S. Congress.

The wide array of devices on display at CES that rely on wireless broadband underscores the urgency of resolving the spectrum issue, Genachowski said.

"The wireless infrastructure in the U.S. will be our platform for ongoing innovation and investment," he said.

Genachowski declined to detail specific goals of the upcoming national broadband plan but said the FCC will make more spectrum available. However, allocating enough spectrum to meet projected demand will require freeing up **spectrum that is currently assigned to users in the private sector and government**, a process that has taken from six years to 13 years to complete in the past, he said.

Given the urgency of the problem, the FCC will have to move quickly to avoid demand for wireless broadband outstripping the supply of available spectrum, Genachowski said, adding that other measures are needed to ensure that wireless networks are used as efficiently as possible.

"We're in a period where we need to look at everything we can do to incentivize and encourage more efficient use of this limited resource," he said.

One way to more efficiently use spectrum is to encourage a secondary market where licensees can easily rent out to other organizations spectrum that they may not be using. That's one idea that the U.S. Department of Justice recently recommended to the FCC in a filing encouraging the agency to move quickly to free up more spectrum.

## The WASHRag

Wireless Association of South Hills, Inc.

Ron Notarius W3WN, Editor

3395 Rosewood Drive

Castle Shannon, PA 15234-2546



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